

**WHAT IS CLAIMED IS:**

1           1. An electroluminescent display device, comprising:  
2           a rear substrate comprising a first electrode layer, a light-emitting layer and a second  
3           electrode layer that are orderly formed on an upper surface of the rear substrate;  
4           a front substrate, that is coupled with the rear substrate, the front substrate comprising a  
5           patterned conductive black matrix layer formed on a lower surface of the front substrate, the  
6           patterned black matrix layer facing the second electrode layer on the rear substrate; and  
7           a plurality of conductive connecting members disposed between the second electrode layer  
8           and the black matrix layer, the conductive connecting members electrically connecting the second  
9           electrode layer to the patterned black matrix layer.

1           2. The electroluminescent display device of claim 1, the connecting members being  
2           conductive spacers disposed between the second electrode layer and the patterned black matrix layer.

1           3. The electroluminescent display device of claim 2, an interior portion of the conductive  
2           spacers being a polymer particle, the outer surface of the conductive spacers being coated with a  
3           metal.

1           4. The electroluminescent display device of claim 1, the connecting members being  
2           protrusions protruding from the black matrix layer.

1           5. The electroluminescent display device of claim 1, the connecting members being made  
2 of a material selected from the group consisting of Ni, Al, Ag, Au, Cu, and an alloy thereof.

1           6. The electroluminescent display device of claim 1, further comprising a transparent filler  
2 material between adjoining connecting members, the transparent filler material being disposed  
3 between the second electrode layer and the black matrix layer, the transparent filler material being  
4 rigid and stable enough to prevent the connecting members from moving.

1           7. The electroluminescent display device of claim 1, the connecting members having a height  
2 of 2 to 30  $\mu\text{m}$ .

1           8. The electroluminescent display device of claim 1, further comprising a color filter layer,  
2 the color filter layer being formed on a same level as the patterned black matrix layer.

1           9. The electroluminescent display device of claim 1, the black matrix layer being electrically  
2 connected to the second electrode layer without significant voltage drop.

1           10. The electroluminescent display device of claim 3, the metal portion of the connecting  
2 members being made of a material selected from the group consisting of Ni, Al, Ag, Au, Cu, and an  
3 alloy thereof.

1 11. The electroluminescent display device of claim 1, the light-emitting layer being organic.

1 12. The electroluminescent display device of claim 1, the light-emitting layer being  
2 inorganic.

1 13. An electroluminescent display device, comprising:  
2 a rear substrate comprising thin film transistor, a first electrode layer driven by the thin film  
3 transistor, a light-emitting layer formed on the first electrode layer and a second electrode layer  
4 formed on the light-emitting layer;  
5 a front substrate that is coupled to the rear substrate, the front substrate comprising a  
6 patterned conductive black matrix layer that is formed on a lower surface of the front substrate and  
7 that faces the second electrode layer of the rear substrate coupled to the front substrate; and  
8 a plurality of conductive connecting members disposed between the second electrode layer  
9 and the patterned black matrix layer, the plurality of conductive connecting members electrically  
10 connecting the second electrode layer to the patterned black matrix layer.

1 14. The electroluminescent display device of claim 13, the connecting members being  
2 conductive spacers disposed between the second electrode layer and the patterned black matrix layer.

1           15. The electroluminescent display device of claim 14, the conductive spacers being made  
2 of a polymer particle, the outer surface of the conductive spacers being made of a conductive metal.

1           16. The electroluminescent display device of claim 13, the connecting members being  
2 protrusions protruding from the patterned black matrix layer.

1           17. The electroluminescent display device of claim 13, the connecting members being made  
2 of a material selected from the group consisting of Ni, Al, Ag, Au, Cu, and an alloy thereof.

1           18. The electroluminescent display device of claim 13, further comprising a transparent filler  
2 material between adjoining connecting members, the transparent filler material being disposed  
3 between the second electrode layer and the black matrix layer, the transparent filler material being  
4 rigid and stable enough to prevent the connecting members from moving.

1           19. The electroluminescent display device of claim 13, the connecting members having a  
2 height of 2 to 30  $\mu\text{m}$ .

1           20. The electroluminescent display device of claim 10, further comprising a color filter layer,  
2 the color filter layer being formed on a same level as the patterned black matrix layer.

1           21. The electroluminescent display device of claim 10, wherein the black matrix layer being  
2           electrically connected to the second electrode layer without significant voltage drop.

1           22. An electroluminescent display device, comprising:  
2           a rear substrate comprising a first electrode layer, a light-emitting layer and a second  
3           electrode layer that are orderly formed on an upper surface of the rear substrate; and  
4           a front substrate, that is coupled with the rear substrate, the front substrate comprising a  
5           patterned conductive black matrix layer formed on a lower surface of the front substrate, the  
6           patterned black matrix layer facing the second electrode layer on the rear substrate, the patterned  
7           black matrix layer serving to deliver power to the second electrode layer from a voltage source.

1           23. The display of claim 22, the display being a front emitting structure, the second electrode  
2           layer being transparent and conductive.

1           24. The display of claim 22, the display being a front emitting structure, the black matrix  
2           layer being patterned in such a way as to minimize the inhibition of passage of radiation generated  
3           in the light-emitting layer from going through the front substrate.

1           25. The display of claim 22, the black matrix layer serving to deliver power from said  
2           voltage source to said second electrode layer without having to undergo a significant voltage drop.

1           26. The display of claim 22, further comprising a conductive spacer disposed between the  
2           patterned black matrix layer and the second electrode layer, the conductive spacer serving to  
3           electrically connect the black matrix layer to the second electrode layer.

1           27. An electroluminescent display device, comprising:  
2           a rear substrate;  
3           a first electrode layer formed above the rear substrate;  
4           a second electrode layer formed above the first electrode layer, the second electrode layer  
5           facing the first electrode layer;  
6           a light-emitting layer interposed between the first electrode layer and the second electrode  
7           layer, the light-emitting layer having an emission layer;  
8           a front substrate facing the rear substrate and contacting an upper surface of the second  
9           electrode layer; and  
10          a functional thin film formed between the second electrode layer and the front substrate, the  
11          functional thin film having a conductive material in a portion thereof contacting the second electrode  
12          layer.

1           28. The electroluminescent display device of claim 27, wherein the functional thin film  
2           comprises a first ingredient that is a transparent material and a second ingredient that is a metal  
3           material, the first ingredient and the second ingredient being sequentially stacked on the front  
4           substrate, as the distance from the front substrate increases within the functional thin film, the

5 concentration of the first ingredient decreases and the concentration of the second ingredient  
6 increases.

1 29. The electroluminescent display device of claim 28, wherein the first ingredient being a  
2 transparent insulating material selected from the group consisting of  $\text{SiO}_x(x \geq 1)$ ,  $\text{SiN}_x(x \geq 1)$ ,  $\text{MgF}_2$ ,  
3  $\text{CaF}_2$ ,  $\text{Al}_2\text{O}_3$ , and  $\text{SnO}_2$  or the first ingredient being a transparent conductive material selected from  
4 the group consisting of ITO, IZO, ZnO, and  $\text{In}_2\text{O}_3$ .

1 30. The electroluminescent display device of claim 28, wherein the second ingredient being  
2 a metal material selected from the group consisting of Fe, Co, V, Ti, Al, Ag, Si, Ge, Y, Zn, Zr, W,  
3 Ta, Cu, and Pt.

1 31. The electroluminescent display device of claim 27, wherein the functional thin film  
2 comprises a first thin film comprising  $\text{CrO}_x(x \geq 1)$  disposed on the front substrate and a second thin  
3 film comprising Cr and disposed on the first thin film.

1 32. The electroluminescent display device of claim 27, wherein a conductive spacer or a  
2 conductive paste is interposed between the functional thin film and the second electrode layer.

1 33. The electroluminescent display device of claim 27, wherein the functional thin film  
2 absorbs incident light from an outside of the display that impinges on the front substrate, the

functional thin film being perforated by openings corresponding to a predetermined pixel pattern of a light-emitting area.

34. The electroluminescent display device of claim 33, wherein the openings of the functional thin film are patterned in the form of dots or stripes.

35. An electroluminescent display device, comprising:  
a rear substrate;  
a pixel region formed above the rear substrate, the pixel region comprising first and second electrodes facing to each other and a light-emitting layer interposed between the first and second electrodes, the light-emitting layer having an emission layer;  
a front substrate facing the rear substrate; and  
a functional thin film formed between the second electrode layer and the front substrate, the functional thin film being perforated by openings so that the light-emitting layer of the pixel region is exposed, the functional thin film being comprised of materials that absorb light incident light from the outside onto the front substrate, the functional thin film comprising a conductive material in a portion of the functional thin film that is in contact with the second electrode layer.

36. The electroluminescent display device of claim 35, wherein the functional thin film is comprised of a first ingredient that is a transparent material and a second ingredient that is a metal material, the first and the second ingredient being sequentially stacked on the front substrate, as the

distance from the front substrate increases within the functional thin film, the content of the first ingredient decreases and the content of the second ingredient increases.

37. The electroluminescent display device of claim 36, wherein the first ingredient being a transparent insulating material selected from the group consisting of  $\text{SiO}_x (x \geq 1)$ ,  $\text{SiN}_x (x \geq 1)$ ,  $\text{MgF}_2$ ,  $\text{CaF}_2$ ,  $\text{Al}_2\text{O}_3$ , and  $\text{SnO}_2$  or a transparent conductive material selected from the group consisting of ITO, IZO,  $\text{ZnO}$ , and  $\text{In}_2\text{O}_3$ .

38. The electroluminescent display device of claim 36, wherein the second ingredient is a metal material selected from the group consisting of Fe, Co, V, Ti, Al, Ag, Si, Ge, Y, Zn, Zr, W, Ta, Cu, and Pt.

39. The electroluminescent display device of claim 35, wherein the functional thin film comprises a first thin film comprising  $\text{CrO}_x (x \geq 1)$  and disposed on the front substrate and a second thin film comprising Cr and disposed on the first thin film.

40. The electroluminescent display device of claim 35, wherein a conductive spacer or a conductive paste is interposed between the functional thin film and the second electrode layer.

41. The electroluminescent display device of claim 35, wherein the openings of the functional thin film are patterned in the form of dots or stripes.